

The invention claimed is:

1. A probe assembly for making electrical contact with circuit elements on an integrated circuit wafer, or the like, said probe comprising:

a first support which is substantially flat;

a second support disposed on said first member and providing a sidewall structure which extends substantially vertically upward from said substantially flat first support;

a substantially flat mask having at least one aperture therein, said mask being supported by said second support at a substantially uniform distance from said first support;

a flexible, self-supporting wire probe affixed to said first support, said wire probe having a pointed end which extends at least partially through said at least one aperture, said wire probe having two substantially oppositely directed bends therein so as to permit said wire probe to flex in response to force applied to said pointed end;

said wire probe comprising a core material selected from the group consisting of platinum and platinum iridium alloys and being plated with material selected from the group consisting of nickel, gold, nickel alloys and gold alloys; and

said wire probe having a core diameter  $d$ , a thickness,  $p$ , of concentrically disposed material, and an offset  $L$ , said offset being the horizontal distance between the point of affixation of said wire probe to said first support and the aperture through which said wire probe extends, said values of  $L$ ,  $p$  and  $d$  being conjointly selected so as to define a point lying in the volume shown in Figures 4A through 4D.

2. The probe structure of claim 1 in which said mask has a plurality of apertures.

3. The probe structure of claim 2 further including a plurality of similarly structured wire probes affixed to said first support and extending through respective ones of said apertures.

4. The probe structure of claim 1 in which said first support comprises ceramic material.

5. The probe structure of claim 1 in which said mask comprises a polyimide layer disposed between an invar layer.

6. A wire probe, for contacting electrically conductive pads on semiconductor wafers and similar devices, said probe comprising:

a flexible, self-supporting wire having a first end and a second, pointed end and also having two substantially oppositely directed bends therein so as to permit said wire to flex in response to force applied to said pointed end, said wire having a core diameter  $d$ , a thickness  $p$  of plated material, and an offset  $L$ , said offset being the horizontal distance between said first end and said second end, said values of  $L$ ,  $p$  and  $d$  being conjointly selected so as to define a point lying in the volume shown in Figures 4A through 4D.

7. The wire probe of claim 6 in which said wire is substantially disposed within a single plane.

8. The wire probe of claim 6 in which said bends are disposed so that flexing of said wire occurs substantially within a single plane.

9. The wire probe of claim 6 in which said wire probe comprises a core material selected from the group consisting of platinum and platinum iridium alloys and which is plated with material selected from the group consisting of nickel, gold, nickel alloys, and gold alloys.